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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,593	02/15/2002	Ellen M. Heath	Q008.1070.1	9392

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EXAMINER	
STRZELECKA, TERESA E	
ART UNIT	PAPER NUMBER
1637	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/075,593	HEATH ET AL.	
	Examiner	Art Unit	
	TERESA E. STRZELECKA	1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-17,19-28,30-38,40-49,51-59 and 61-65* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-17,19-28,30-38,40-49,51-59 and 61-65* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to an amendment filed March 4, 2008. Claims 1-7, 9-17, 19-28, 30-38, 40-49, 51-59 and 61-65 were previously pending. Applicants amended claims 11, 12, 16, 32, 33, 37, 53, 54 and 58. Claims 1-7, 9-17, 19-28, 30-38, 40-49, 51-59 and 61-65 are pending and will be examined.

2. Applicants' amendments overcame the rejection of claims 11, 12, 16, 32, 33, 37, 53, 54 and 58 under 35 U.S.C. 112, second paragraph. All other previously presented rejections are maintained for reasons given in the "Response to Arguments" below.

Response to Arguments

3. Applicant's arguments filed March 4, 2008 have been fully considered but they are not persuasive.

A) Regarding the rejection of claims 1-7, 9-16, 19-28, 30-37, 40-49, 51-58 and 61-65 under 35 U.S.C. 103(a) over Fairman, Applicants argue the following:

i) Fairman does not teach or suggest all of the limitations. Specifically, Applicants argue that Fairman does not teach a hypertonic, high salt reagent or contacting a biological material so as to form a suspension of the biological material. Applicants argue that Fairman teaches a solution with a salt concentration of about 200-300 mM to lyse red blood cells, therefore such solution is hypotonic, not hypertonic.

ii) Applicants presented evidence of unexpected findings including "reducing the overall time, number of steps and reagents required for isolating DNA", including rapid resuspension of cells without significant damage to the sample.

B) Regarding the rejection of claims 17, 38 and 59 under 35 U.S.C. 103(a) over Fairman and Hanak et al., Applicants argue the following:

i) Fairman does not teach or suggest a hypertonic, high salt reagent or contacting a biological material so as to form a suspension of the biological material.

ii) Hanak et al. do not teach or suggest a hypertonic, high salt reagent or contacting a biological material so as to form a suspension of the biological material. Further, Hanak et al. allegedly teaches away from using exogeneously produced RNAses.

Regarding A), i) the only definition of "hypertonic solution" provided by Applicants is provided on page 10, second paragraph:

" The first reagent, referred to herein as a "hypertonic, high-salt reagent," is a hypertonic reagent that includes a high concentrations of salts such as sodium, ammonium, or potassium salts dissolved in water. A hypertonic solution is a solution having a higher osmotic pressure than that found within a biological entity such as a cell or tissue."

Therefore, no specific salt concentrations were defined for the hypertonic solution. As known to ordinary practitioners in the art, the intracellular salt concentrations are around 0.1 M for monovalent cations, for example, therefore a solution with 0.2-0.3 M NaCl is hypertonic with respect to the intracellular ion concentration according to Applicants' own definition. Further, in the Examples presented by Applicants there is no information of what salt type and concentrations were used. Applicants provided only the information that Puregene™ reagents were used, and the examples are drawn to isolation of DNA from blood, whereas claims 1, 2 and 24 are drawn to isolation of DNA from any sample.

Regarding ii), the "unexpected results" were obtained only for the isolation of DNA from blood, not from any other biological samples. Comparison of DNA extraction steps from Example 1 indicates that while the total extraction time was less in the protocol where high-salt solution was

used to resuspend the white blood cells, the number of steps differed by one. Further, the reagents used in both methods were the same. Therefore, Applicants' claim to "unexpected results" in not commensurate in scope with the claims, as no specific salt concentrations and solutions are claimed, and only one type of biological sample, blood, was examined.

The rejection is maintained.

Regarding B), i), the arguments was addressed above.

Regarding ii), Applicants do not claim any specific source of RNAse to be used in the method, therefore Hanak et al. cannot teach away from it.

The rejection is maintained.

Claim Interpretation

4. Applicants defined the term "hypertonic solution" on page 10, second paragraph:

" The first reagent, referred to herein as a "hypertonic, high-salt reagent," is a hypertonic reagent that includes a high concentrations of salts such as sodium, ammonium, or potassium salts dissolved in water. A hypertonic solution is a solution having a higher osmotic pressure than that found within a biological entity such as a cell or tissue."

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-7, 9-16, 19-28, 30-37, 40-49, 51-58 and 61-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fairman (US 2002/0068280 A1; cited in a previous office action).

A) Claims 1, 2, 24 and 45 will be considered together in claim 45, since it is a species of claims 1, 2 and 24.

Regarding claims 1, 2, 24 and 45, Fairman teaches a method of isolating DNA from a biological sample comprising red and white blood cells, the method comprising the following sequential steps:

(a) contacting the biological sample with a red blood lysis reagent to lyse the red blood cells (Fig. 1, step 120; page 1, [0010]; page 2, [0022]; page 3, [0027], [0028]);

(b) separating the white blood cells from the lysed red blood cells (Fig. 1, step 130; page 2, [0022]; page 3, [0029]);

(c) contacting the white blood cells with a hypertonic, high-salt reagent to suspend the white blood cells in a solution of said hypertonic, high-salt reagent (Fig. 1, step 130; page 2, [0022]; page 3, [0026], [0030]; since the second solution contains salt concentration of about 200-300 mM, it is a hypertonic solution);

(d) subsequently contacting the white blood cells of step (c) with a lysis reagent so as to lyse the biological material containing DNA to form a lysate containing DNA and non-DNA cellular material (Fig. 1, step 140; page 2, [0022]; page 3, [0031]) and

(e) separating the DNA from non-DNA cellular material of the lysate to yield isolated DNA (Fig. 1, steps 150, 160; page 2, [0022]; page 4, [0034]-[0040]; page 5, [0041]).

Regarding claims 3, 6, 25, 27, 46 and 48, Fairman teaches whole blood (page 2, [0022]).

Regarding claim 4, Fairman teaches whole blood (page 2, [0022]), therefore they inherently teach samples containing viruses.

Regarding claims 5, 26 and 47, Fairman teaches bone marrow (page 3, [0024]).

Regarding claims 7, 28 and 49, Fairman teaches separating the DNA from proteins (page 4, [0035]).

Regarding claims 13-16, 34-37 and 55-58, Fairman teaches using 0.1% w/v SDS in the lysis solution (page 2, [0022]).

Regarding claims 9-11, 30-33 and 51-54, Fairman teaches ammonium salt solutions with concentration of about 0.2-0.3 M (page 3, [0026]) and using 5 M solution of ammonium acetate to precipitate proteins (page 4, [0035]).

Regarding claims 19, 20, 40, 41, 61 and 62, Fairman teaches removal of the protein precipitate by centrifugation (page 4, [0037]).

Regarding claims 21, 22, 42, 43, 63 and 64, Fairman teaches precipitation of DNA with alcohol and centrifugation (page 5, [0041]), i.e. they teach precipitation and washing of the DNA.

Regarding claims 23, 44 and 65, Fairman teaches using the DNA in a PCR reaction, i.e. rehydrating the DNA (page 5, [0040]).

B) Fairman does not teach adding the high-salt solution which precipitates the DNA before lysing the cells.

However, it would have been *prima facie* obvious to one of ordinary skill in the art to have reversed the steps of adding a high-salt solution before cell lysis. As stated in several Court decisions, changing the order of steps is prima facie obvious (see MPEP 2144.04.IV.C):

> *Ex parte Rubin*, 128 USPQ 440 (Bd. App. 1959) (Prior art reference disclosing a process of making a laminated sheet wherein a base sheet is first coated with a metallic film and thereafter impregnated with a thermosetting material was held to

render *prima facie* obvious claims directed to a process of making a laminated sheet by reversing the order of the prior art process steps.). See also *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) (selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results); *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930) (Selection of any order of mixing ingredients is *prima facie* obvious.).

7. Claims 17, 38 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fairman (US 2002/0068280 A1; cited in a previous office action) and Hanak et al. (U.S. Patent No. 6,780,632 B1).

A) The teachings of Fairman et al. are presented above. The reference does not teach using RNAse in the purification protocol.

B) Hanak et al. teach preparing RNA-free DNA using RNAse (Abstract; col. 2, lines 30-35; col. 35, lines 46-67; col. 36; col. 37; col. 38, lines 1-44).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to have used RNAse of Hanak et al. in the DNA preparation method of Fairman. The motivation to do so, provided by Hanak et al., is that RNA is a major contaminant of preparations of genomic and plasmid DNA from cell lysates (col. 1, lines 36-50).

8. No claims are allowed.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the

date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TERESA E. STRZELECKA whose telephone number is (571)272-0789. The examiner can normally be reached on M-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (571) 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Teresa E Strzelecka
Primary Examiner
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/Teresa E Strzelecka/
Primary Examiner, Art Unit 1637
May 27, 2008